

## 0087

**Progressive increase in ventriculo-arterial impedance is associated with LV dysfunction and adverse outcomes in patients with severe aortic stenosis**

Elena Galli (1), Emmanuel Oger (2), Yvan Guirette (1), Philippe Mabo (1), Erwan Donal (1)

(1) CHU Pontchaillou, Cardiologie, Rennes, France – (2) CHU Pontchaillou, Pharmacologie, Rennes, France

**Introduction:** ventriculo-arterial impedance ( $ZV_a$ ) is recognised as influencing exercise tolerance, syncope onset and prognosis in aortic stenosis (AS) patients

**Aim:** of the present study is to show that increase in  $ZV_a$  is associated with impairment of left ventricular (LV) function and adverse outcome in AS.

**Methods:** 218 patients (mean age:  $79.9 \pm 8.6$  years, males: 54%) with severe AS (aortic surface  $< 1 \text{ cm}^2$  or  $< 0.6 \text{ cm}^2/\text{m}^2$ ) underwent standard echocardiography to characterize aortic valve gradients, biventricular function and  $ZV_a$ . At follow-up, hospitalization for cardiac cause, heart failure and overall death were considered as major adverse cardiac events (MACEs).

**Results:** according to  $ZV_a$  values our population was divided in four groups (Table 1). Progressive increase in  $ZV_a$  was associated with a progressive reduction in LV ejection fraction (LVEF), mitral  $S'$ , indexed stroke volume ( $SV_i$ ) and LV global longitudinal strain (GLS). At Kaplan-Meier survival analysis, a  $ZV_a > 3.43 \text{ mmHg/ml/m}^2$ , as observed in Group B, C and D patients, was associated with a poor prognosis (Log-Rank test,  $p=0.02$ )

**Conclusions:** in patients with severe AS, progressive increase in ventriculo-arterial impedance has a negative impact on LV performance, and a mild elevation in ventriculo-arterial impedance is associated with a poor prognosis.

## 0112

**Determinants and prognostic impact of left ventricular contractile reserve in asymptomatic aortic stenosis**

Julien Magne (1), Erwan Donal (2), Raluca Dulgheru (1), Luc A. Piérard (1), Patrizio Lancellotti (1)

(1) CHU Sart Tilman, Cardiologie, Liège, Belgique – (2) CHU Rennes, Rennes, France

**Background:** The management of asymptomatic patients with severe aortic stenosis (AS) is extremely controversial. There are very few data regarding the assessment, determinants and prognostic value of left ventricular contractile reserve (LVCR) in these patients. We aimed to quantify LVCR and to evaluate its determinants and usefulness for risk stratification in asymptomatic patients with severe AS.

**Methods and results:** Asymptomatic patients with severe AS ( $n=150$ , aortic valve area  $< 1 \text{ cm}^2$ ,  $70 \pm 9$  years, 64% of male) and preserved left ventricular (LV) systolic function (LV ejection fraction  $\geq 55\%$ ) were prospectively referred to exercise stress echocardiography. Using 2D speckle tracking analysis, LVCR was defined as an exercise-induced changes in LV global longitudinal strain  $> 2\%$ . LVCR was present in 62 patients (41%) and there was no significant difference between LVCR and no LVCR groups regarding demographic, clinical and exercise data, as well as risk factors. Using multiple linear regression, after adjustment for age, sex and E/Ea ratio, the independent determinant of exercise-induced changes in LV global longitudinal strain were aortic mean pressure gradient ( $p=0.005$ ), LV ejection fraction ( $p=0.035$ ) and

exercise indexed LA area ( $p=0.002$ ). During a mean follow-up of  $19 \pm 12$  months, 76 events (51%) occurred. The absence of LVCR was associated with reduced 4-year cardiac event-free survival ( $26 \pm 6$  vs.  $53 \pm 11\%$ ,  $p<0.0001$ ). By opposition, exercise-induced changes in LV ejection fraction did not predict the outcome ( $p=0.96$ ). In multivariate analysis, the independent predictors of events were resting brain natriuretic peptide level ( $p<0.0001$ ), aortic mean pressure gradient ( $p=0.037$ ), exercise cardiac output ( $p=0.004$ ) and absence of LVCR (HR=1.8, 95%CI: 1.05-3.08,  $p=0.033$ ).

**Conclusion:** In asymptomatic patients with severe AS, the main determinants of LVCR, as assessed using exercise-induced changes in LV global longitudinal strain, were related to AS severity and exercise LA size. The absence of LVCR is a powerful predictor of reduced cardiac event-free survival. These results strongly support the use of exercise stress echocardiography in asymptomatic AS.

## 0147

**Prognostic value of NT-proBNP in Algerian patients with asymptomatic aortic stenosis**

Ilyes Bouaguel, Hocine Foudad, Aziz Trichine, Rachid Merghit  
Hôpital militaire, Cardiologie, Constantine, Algérie

**Introduction and objectives:** Aortic stenosis (AS) is the most common valve disease. Aortic valve replacement (AVR) is the treatment of choice in symptomatic patients with severe AS. Our objective was to assess the prognostic value of NT-proBNP in Algerian patients with asymptomatic moderate/severe aortic.

**Methods:** Prospective study of 225 patients with degenerative asymptomatic moderate/severe aortic stenosis. NT-proBNP was determined in all patients, who were then followed up clinically. A clinical event was defined as surgery, hospital admission due to angina, heart failure or syncope, or death.

**Results:** A total of 51% were women, and the mean age was 74 years. Mean (SD) echocardiographic values were as follows: peak velocity  $4.14$  ( $0.87$ ) m/s; mean gradient,  $43.2$  ( $16.0$ ) mmHg; aortic valve area,  $0.87$  ( $0.72$ )  $\text{cm}^2$ , and aortic valve area index,  $0.49$  ( $0.14$ )  $\text{cm}^2/\text{m}^2$ . The median NT-pro-BNP value was  $490.0$  [ $198.0$ - $1312.0$ ] pg/mL. There were 139 events during follow-up (median 12 months). The optimum NT-proBNP cut-point was  $515$  pg/mL, giving event-free survival rates at 6 months and 1 years of 93% and 57%, respectively, in patients with NT-proBNP  $< 515$  pg/mL compared with 50% and 31% in those with NT-proBNP  $> 515$  pg/mL.

**Conclusions:** NT-proBNP determination provides prognostic information in patients with asymptomatic moderate/severe aortic stenosis.

## 0276

**Balloon mitral valvotomy for patients with mitral stenosis in atrial fibrillation: immediate and long term prognosis**

Majed Hassine, Ibtihel Mechri, Ghassen Chniti, Mejdi Ben Massoud, Marouen Mahjoub, Nidhal Bouchahda, Zohra Dridi, Fethi Betbout, Habib Gamra

Hôpital Fattouma Bourguiba, Cardiologie A, Monastir, Tunisie

**Background:** Atrial fibrillation (AF) is a common finding in patients with severe mitral stenosis requiring Balloon Mitral Valvotomy (BMV). Its immediate and long term prognosis remains controversial.

Abstract 0087 – Table1

Table 1	Group A $ZV_a \leq 3.43$ $\text{mmHg/ml/m}^2$	Group B $3.43 < ZV_a \leq 4.1$ $\text{mmHg/ml/m}^2$	Group C $4.1 < ZV_a \leq 5.10$ $\text{mmHg/ml/m}^2$	Group D $ZV_a > 5.10$ $\text{mmHg/ml/m}^2$	ANOVA p-value
LVEF (%)	$57.9 \pm 10.8$	$58.6 \pm 9.5$	$56.8 \pm 12.9$	$50.64 \pm 14.5$	0.02
$SV_i$ ( $\text{ml/m}^2$ )	$49.6 \pm 14.0$	$47.3 \pm 7.1$	$40.9 \pm 5.9$	$31.6 \pm 6.8$	$< 0.0001$
Onde $S'$ (cm/sec)	$6.2 \pm 1.2$	$6.5 \pm 1.6$	$6.21 \pm 1.9$	$5.6 \pm 1.5$	0.05
GLS (%)	$-14.4 \pm 13.3$	$-13.3 \pm 3.4$	$-12.5 \pm 3.5$	$-10.6 \pm 3.2$	$< 0.0001$